

What is claimed is:

1. An optical cross-connect for switching connections in an optical transmission network, in which optical communication signals of different

5 multiplex levels with respectively defined bit rates can be transmitted, communication signals of a higher multiplex level being composed of communication signals of a lower multiplex level or directly containing a payload data signal; the cross-connect containing:

- a number of input/output ports respectively adapted to transmit and

10 receive communication signals of a particular multiplex level, and

- a switching matrix connected to the input/output ports,

wherein the switching matrix is a space switching matrix which is adapted to switch communication signals of the lowest multiplex level, and wherein

input/output ports of higher multiplex levels are linked to the switching matrix via

15 a multiplexer which is adapted to multiplex a number of communication signals of the lowest multiplex level that are received from the switching matrix, so as to form a communication signal of the corresponding higher multiplex level, and to demultiplex a communication signal of the higher multiplex level that is received from the respective input/output port, so as to form a number of communication

20 signals of the lowest multiplex level, and forward these individually to the switching matrix.

2. An optical cross-connect according to Claim 1, in which the switching matrix is a transparent space switching matrix.

25 3. An optical cross-connect according to Claim 2, in which the switching matrix is an optical space switching matrix.

4. An optical cross-connect according to Claim 2, in which the switching matrix is an electrical space switching matrix.

30 5. An optical cross-connect according to Claim 1, in which ports for a lowest hierarchy level, with a bit rate of 2.66 Gbit/sec, and two higher hierarchy levels,

each with four times the bit rate of the hierarchy level immediately below, are respectively provided, in which input/output ports of the middle multiplex level are linked to the switching matrix via a first multiplexer, the first multiplexer being adapted to multiplex four communication signals of the lowest hierarchy level so

5 as to form one communication signal of the middle hierarchy level, and vice versa, and in which input/output ports of the top multiplex level are linked to the switching matrix via a second multiplexer, the second multiplexer being adapted to multiplex sixteen communication signals of the lowest hierarchy level so as to form one communication signal of the highest hierarchy level, and vice versa.

10 6. Optical cross-connect according to Claim 1, in which the subassemblies are embodied modularly in the form of plug-in circuit boards.

7. A method for switching optical communication signals of different multiplex levels with respectively defined bit rates, communication signals of a higher multiplex level being composed of communication signals of a lower multiplex

15 level or directly containing a payload data signal, with the steps:

- receiving an optical communication signal;
- if the optical communication signal is a communication signal of a higher multiplex level, sending the communication signal to a multiplexer and demultiplexing the communication signal so as to form a number of communication signals of the lowest multiplex level;
- sending the communication signals of the lowest multiplex level to a switching matrix;
- identifying the output to which the received communication signal is to be switched;
- if the communication signal is to be switched to an output which supports the lowest hierarchy level, switching the communication signal to the relevant output; and
- if the communication signal is to be switched to an output which supports a higher hierarchy level,
  - switching the communication signal to a multiplexer,

- multiplexing the communication signal so as to form a communication signal of the higher hierarchy level, and
- forwarding the communication signal to the relevant output.